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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,930	09/26/2003	Ulrich Bonne	H0004978(1100.1208101)	8299

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EXAMINER
MOSS, KERI A

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/671,930	BONNE ET AL.	
	Examiner	Art Unit	
	Keri A. Moss	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *25 April 2006 and 21 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 22-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 22-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendment filed August 18, 2006 and Remarks filed April 25, 2006 are hereby acknowledged. Claims 1-10 and 22-30 are pending.

Election/Restrictions

1. Applicant's election without traverse of Group I claims 1-10 and 22-30 in the reply filed on April 25, 2006 is acknowledged. Claims 11-21 and 31-42 have been withdrawn from consideration.

Response to Amendment

2. Previous rejection of claims 1-10 and 22-30 as indefinite have been withdrawn in light of applicant's amendments and arguments. New grounds of rejection of claims 1-10 have been added in light of applicant's amendments.

Rejection of claims 1 and 22-30 as non-enabled has been withdrawn in light of applicant's amendments.

Objections to the Drawings are maintained. Examiner acknowledges that Applicant's amendments rectified the previous rejection; however, the amendments have introduced new grounds for rejection.

The rejections under Bonne and Geis have been changed to an obviousness rejections in light of applicant's amendments. The rejections under Kubisiak have been maintained.

Double Patenting Rejection has been withdrawn in light of applicant's amendments and arguments.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the connection between the ratio control mechanism and the phased heater array must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Alternatively, Applicant may choose to clarify in the claims that the ratio control mechanism is connected to the phased heater array through the controller.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims **1-10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what applicant means by "connected." In claim 1, applicant claims the ratio control mechanism is connected to the phased heater array; however, in Figure 2, the ratio control mechanism 490 is only indirectly connected to the phased heater array. The ratio control mechanism is directly connected to the controller, which is directly connected to the phased heater array (as shown in Figure 3). Examiner interprets Applicant's use of connected to mean directly or indirectly connected.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims **1-2, 5-6, 22-24, 28 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonne (USP 6,393,894). Bonne discloses a fluid sensor comprising a concentrator (Fig. 6 part 124); a separator connected to the concentrator (Fig. 6 part

126); a phased heater array having a first plurality of heating elements situated in the concentrator (Fig. 7 parts 168a-d) and a heating element situated in the separator (Fig. 7 part 170); a ratio control mechanism (Fig. 7 part 180) for changing the ratio of concentrator heating elements relative to separator heating elements (Fig. 8); the ratio control mechanism and the controller connects to the phased heater array (Fig. 7) and a first detector connected to the separator (Fig. 7 part 164). Figure 8 shows that the ratio control mechanism (part 180) and the controller (part 130) change the ratio of active concentrator heater elements to separator heating elements from 1:1 to 0:1. A micro discharge mechanism is located proximate to the first detector (Fig. 9 outlet below part 264; column 4 lines 14-19) and connected to the controller (Fig. 9). It is inherent that the sensor in Bonne comprises a processor connected to the detector as the detector cannot be read without one. Since a processor is inherently connected to the detector, it is also connected to the concentrator, separator, micro discharge mechanism and anything else connected directly or indirectly to the detector. It is also inherent that the processor comprises switches and control logic. A controller (Fig. 6 part 130) is connected to the concentrator and separator and is capable of changing the ratio of concentrator heating elements to the separator heater element (Fig. 8). The concentrator may be a pre-concentrator as there may be an unlimited number of phased heater arrays (Fig. 8). The heater elements apply heat in a sequential phased manner to the concentrator (Fig. 3). The detector may be a thermal-conductivity detector (Fig. 6 part 128).

Bonne does not expressly disclose a plurality of heater elements in the separator. *In re Harza* 274 F.2d 669, 124 USPQ 378 (CCPA 1960) teaches that it is well settled that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. The prior art of *In re Harza* taught one rib whereas the claims at issue claimed a plurality of ribs. Id. at 381. In the instant case, Bonne teaches a single heater element in the separator whereas Applicant claims a plurality of heater elements. Bonne teaches that the separator heater element separates the constituent gasses into individual constituent components. The expected result of providing a plurality of heater elements is a more precise separation of the components. Therefore, it would have been obvious to one of ordinary skill in the art to increase the number of heater elements in the separator in order to have a more precise separation of components in the gas.

8. Claims **1-2, 22-24, 28, and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Geis (USP 6,413,781) in view of Manginell (USP 6,666,907). Geis discloses a concentrator (Fig. 8 part 78) comprising a plurality of heating elements (Fig. 8 part 90) and a controller (Fig. 8 part 93) that changes the number of heating elements activated at one time (Fig. 4). The concentrator may be a pre-concentrator (column 9 lines 7-20). The heater elements apply heat in a sequential phased manner to the concentrator (column 8 lines 6-14).

While Geis teaches using the concentrator device with a separator sensing device (column 9 lines 11-13), Geis does not expressly teach a separator unit that

contains a plurality of heater elements. Therefore, Geis also does not teach a ratio control mechanism that changes the ratio of heater elements in the concentrator to the separator. Manginell discloses a separator comprising a plurality of heating elements (column 4 lines 42-52) and a detector connected to the separator (paragraph joining column 6 and 7). A discharge device is connected to the concentrator and proximate to the separator (Fig. 8 parts 95, 101). The detector may be a thermal conductivity detector (column 6 lines 64-67).

The advantage of the Manginell separator device is that it is microfabricated, making it compatible with the Geis device, and is temperature programmable. The Manginell separator device permits rapid, low-power and sensitive temperature programming and the temperature ramp rates are an order of magnitude faster than conventional GC columns (column 2 lines 30-44). Therefore it would have been obvious for one of ordinary skill in the art to combine the Geis concentrator device with the Manginell separator device in order to gain the advantages of the faster, low power and sensitivity temperature programming for separation.

9. Claims **3-10 and 25-27 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Geis and Manginell, as described supra, in view of Kubisiak (USP 6,169,965). Geis and Manginell do not disclose a second detector or a flow sensor. Nor does Geis and Manginell teach a processor on a separate board from the concentrator, separator and phased heater array.

With regard to claims **3-4 and 28-29,** Kubisiak discloses a detector 210 (Fig. 4) and a flow sensor 222 (Fig. 4), both connected to a processor 430 (column 9 lines 43-53; Fig. 9) comprising switches (Fig 9) and control logic (column 10 lines 10-13). Detector 210 is used to measure fluid properties (column 7 lines 43-45), whereas 222 is used as a flow sensor (Column 7 lines 49-50). Kubisiak teaches that the flow sensor may be located upstream or downstream of the heating element (column 8 lines 61-65). An advantage of using the Kubisiak system is that the processor 430 uses the data from the heater and the sensors to determine phase lags between the signals as well as fluid properties such as pressure or temperature. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Geis and Manginell sensor structure with the processor and switches of Kubisiak in order to control the timing of the activation of the different heating elements and to gain the additional advantage of determining the phase lag and fluid properties.

Claims **5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Geis and Manginell in view of Kubisiak and further in view of Geis. Regarding the processor wired to the detectors on an independent board, see Geis column 9 lines 7-20, wherein the sensor device is selected from one of many known in the art, including and not limited to the Ion Mobility Spectrometer ("IMS"). It was well known in the art at the time of invention that sensing devices such as the IMS have control logic and are capable of being programmed to detect the signature of many different compounds. Therefore it would have been obvious to one skilled in the art at the time of invention that the sensor

device of Geis and Manginell would have a processor board with programmable control logic in order to detect the signatures of components.

With respect to claims **8-10 and 25-27**, Geis and Manginell do not teach a sensor wherein the concentrator, separator and phased heating elements are on a separate board from the processor. Kubisiak discloses a system in which the heaters and sensors are on a board separate from, but connected via wire bonds to, a board containing the processor, switches and control logic. While it appears that Kubisiak does not separate the heating elements from the processor, it would have been obvious to one or ordinary skill in the art to make separate the heaters from the processor to prevent overheating of the processor.

Response to Arguments

10. Applicant's arguments, see Amendment, filed April 25, 2006, with respect to the anticipation rejection of claims 1, 2, 5, 22-24, 28 and 30 under Bonne have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new obviousness ground of rejection is made in view of Bonne.

11. Applicant's arguments, see Amendment, filed April 25, 2006, with respect to the anticipation rejection of claims 1, 2, 22-24 and 30 under Geis have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new obviousness ground of rejection is made under Geis in view of Manginell.

12. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Geis, Manginell and Kubisiak apparatus are focused on the same goal: to determine the thermal conductivity and thermal diffusivity of the sample of interest. Kubisiak teaches that the fluid velocity can be determined by knowing the distance between the heater element and the sensor element as well as the contribution of thermal diffusivity (column 2 lines 14-30). In Geis, the distance between the heater elements and the sensor were unknown as Geis did not claim a specific sensor. However, the combination of Geis and Manginell creates an apparatus with a determinable distance between the heater elements and the sensor element. Kubisiak teaches that an additional quality of the sample of interest can be determined, specifically the fluid velocity, when this distance is known. Kubisiak thereby suggests the use of a flow sensor with a device such as the combined Geis and Manginell device in order to gain the advantages of determining fluid velocity.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keri A. Moss
Examiner
Art Unit 1743

KAM 10/29/06

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